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ABSTRACT

The relationship between pre-cognition and creativity was investigated in an effort to reaffirm previous findings (Costello 1977) of a correlation between these variables. A sample of 100 engineering freshmen was tested for creativity using the Torrance Test for Creative Thinking and was tested for pre-cognitive ability using the Dean-Mihalasky test. Creativity is measured by the Torrance Test through three activities involving the subject's figural response to various stimuli. The first activity is scored only for originality and elaboration; the second and third activities are scored for fluency, flexibility, originality, and elaboration. Pre-cognition, the ability to forecast future events, is scored by comparing a 100-digit number forecasted by the subject to a 100-digit random number subsequently produced by a computer's random generator. When a digit in the forecasted number corresponds to a digit in the computer's number, a hit is recorded. The pre-cognitive scores were correlated to each of the 18 sets of scores produced by the creativity tests. Results indicate a strong, negative relationship between scores on Activity Two of the Torrance Test and scores on the Dean-Mihalasky pre-cognition test. References and data from the 1977 study are appended. (SW)

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A Study In The Further Development Of A Relationship Between Precognition And Creativity

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1980

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ABSTRACT

A Study in the Further Development of a Relationship Between Pre-cognition and Creativity

F. J. Costello
Nova University - University of New Haven - 1979

During 1977 the author performed research that investigated the effects of an engineering curriculum on the creative potential of university students. As a collateral interest, creativity scores were correlated to pre-cognition scores. An interesting pattern of relationship between creativity and pre-cognition developed. Complete details of the experiment with results and raw data are available via ERIC Document #165628.(1)

The purpose of the present study was to determine whether or not the correlation between pre-cognition and creativity that developed in the 1977 study could be maintained via additional study.

A sample of 110 engineering freshmen were tested for creativity via the Torrance Test for Creative Thinking. Also, the subjects were tested for pre-cognitive ability using the Dean-Mihalasky test. (2)

Results indicate a relationship between scores on activity 2 of the Torrance test and scores on the pre-cognition test. The 1977 experiment also produced a relationship between activity 2 and pre-cognition.

The results support the conclusion that activity 2 of the Torrance Test is producing scores that are rather strongly and negatively related to scores produced by the Dean-Mihalasky pre-cognition test.

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INTRODUCTION

During 1977, the writer did extensive research that investigated the creativity of students at an urban university. (1) The study addresses a number of questions that involved the creativity of engineering students and liberal arts students at both the freshman and senior level.

Conclusions of the 1977 study included:

1) The four year engineering and liberal arts curriculum had no effect on the creative potential of students.

2) The creative potentials of engineering students and liberal arts students were the same.

As a matter of curiosity, the 1977 experiments included an investigation of possible relationships between creativity and pre-cognition. Results of this phase of the 1977 study showed a correlation between certain parts of the creativity scores and the scores of the pre-cognition tests.

The purpose of the present experiments was to determine whether or not the correlations between pre-cognition and creativity that were established in the 1977 study can be maintained, via additional data and analysis.

THE 1977 STUDY

The creative profile of 40 engineering seniors, 36 engineering freshmen, 36 liberal arts seniors and 38 liberal arts freshmen was produced via the Torrance Test for Creativity, figural B. (3)

Creativity is measured by the Torrance Test via three activities that involve the subject's figural response to various stimuli.

There are three activities. The first activity is scored only for originality and elaboration. The second activity involves 10 separate stimuli, and is scored for fluency, flexibility, originality and elaboration. The third activity, a circle completion exercise, is also scored for fluency, flexibility, originality and elaboration.

The total number of single scores that can be developed using the Torrance Test is 18. They are:

Activity 1	Originality
Activity 1	Elaboration
Activity 2	Fluency
Activity 2	Flexibility
Activity 2	Originality
Activity 2	Elaboration
Activity 3	Fluency
Activity 3	Flexibility
Activity 3	Originality
Activity 3	Elaboration
Total Score	Fluency
Total Score	Flexibility

Total Score	Originality
Total Score	Elaboration
Total Score	Activity 1
Total Score	Activity 2
Total Score	Activity 3
Total Score	Activity 1 + 2 + 3

The 1977 study produced 18 creativity scores for each subject. Also, each subject was tested for pre-cognitive ability via the Dean-Mihalasky Test.

Pre-cognition, the ability to forcast future events, is scored by comparing a 100 digit number, forcasted by the subject to a 100 digit random number subsequently produced by a computer's random generator. When a digit in the forcasted number corresponds to a digit in the computer's number, a "hit" is recorded. The expected number of hits, by chance alone, is 10.

The pre-cognitive scores were correlated to each of the 18 sets of scores produced by the creativity tests. A pattern of correlation developed relative to activity 2 of the Torrance Test. Results are given in Table 1. (Footnote 1) The favorable correlation pattern appeared only for engineering freshmen.

Footnote 1: The original data for creativity and precognition are given in the appendix of the 1977 study. See reference 1. Also, an extensive bibliography is included in the 1977 study.

Table 1 - Activity 2, Correlations of creativity to pre-cognition, Engineering Freshmen, 1977 Study.

Identification	Correlation	Confidence, %
Activity 2-Fluency	-1.7913	93
Activity 2-Flexibility	-1.7352	92
Activity 2-Originality	-1.6754	91
Activity 2-Elaboration	-1.5180	89
Activity 2-Total Score	-1.7906	93

The Z scores of all the creativity to pre-cognition correlations relative to activity 2 were higher than the correlations Z scores for any of the other creativity categories. Only activity 2 produced high Z scores for each of the five creativity scores associated with activity 2. No other aspects of the creativity scores produced correlation Z scores as high or as consistent as activity 2.

If each of the 18 correlation Z scores behaved by chance alone, the probability that each score associated with activity 2 only would be higher than any other scores may be calculated as a specific selection of five items out of 18 items. The calculation of probability follows:

$$P = \frac{c(5,5)\ c(13.0)}{c(18,5)} = \frac{1}{8568} = .0001167$$

The likelihood of one chance out of approximately 8600 is low enough to justify further study. Consequently, during the period between 1977 and 1979, the writer implemented a series of additional studies in an effort to duplicate the correlations between activity 2 of the Torrance Test and pre-cognition.

THE 1977 - 1979 STUDIES

Subjects

The Torrance Creativity Test, figural B, and the Dean-Mihalasky Pre-cognition Test were administered to 110 students. The students were freshmen in the various programs administered by the School of Engineering. A profile of the students who attend the University's School of Engineering is presented in ERIC Document #ED 131784. (9)

Test Reliability and Validity

Reliability of the Torrance Test has been investigated by several researchers. (4) (5) (6) Various tests were used to develop correlations to the Torrance Test. There is reasonable evidence to support the reliability of the Torrance Test.

Validity of the Torrance Test is supported by Fleming and Yamamoto in separate studies. (7) (8) However, Thorndike has criticized the Torrance system. For a discussion of Thorndike's view and a rebuttal by Dr. Torrance, see the Norms-Technical Manual for the Torrance system. (3)

The reliability and validity of the Dean-Mihalasky pre-cognition test is difficult to establish. However, the test does seem to respond to a construct-validity analysis. The 1977 study contains a detailed discussion of the validity and reliability of the pre-cognition test. (1)

Data Collection

Creativity and pre-cognition data was collected via several testing sessions that involved different groups of about 20-30 subjects each. The testing was done over a period of four semesters.

Administration and scoring of the Torrance Creativity Test was done according to the instruction guide published by the Personnel Press, entitled Directions Manual and Scoring Guide - 1974 Edition.

The pre-cognition test, a form with one hundred boxes, each to contain a single digit of the subjects' forcast, was administered with the creativity test. Subjects were instructed to try to forcast a number that would subsequently be produced by a computer's random generator.

A seed number was selected to start the random generator. The number was selected by drawing numbered ping-pong balls from a box. The computer's random 100 digit number was compared, digit by digit, to the subject's prediction. The number of matched digits is the subject's score.

Subjects were not asked to identify themselves since a free and creative response to the creativity test could be inhibited if the subject knew that he could subsequently be associated with his response. This procedure, while the writer feels that it is necessary, does block an analysis of casual factors.

Data Analysis

Data analysis was based on the following null hypothesis:

There is no relationship between the creative potential and the pre-cognitive ability of the subjects.

Creativity and pre-cognition scores were correlated via a Pearson linear correlation. The hypothesis is non-directional and assumes the null condition where the correlation factor is zero.

RESULTS

Creativity

Table 2 presents the mean creativity scores for each of the four components of the Torrance test. (see Footnote 2)

Table 2 - Mean Creativity Scores

Component	Mean Score
Fluency	18.61
Flexibility	14.85
Originality	34.46
Elaboration	65.42

Precognition

The average precognition score was 9.69, slightly less than what may be expected by chance alone.

Test of Hypothesis

A Z statistic was used to calculate a confidence level relative to the correlation of creativity scores to precognition scores. All 18 categories of creativity were correlated to precognition. Appendix A lists the description of the 18 categories.

The null hypothesis assumes that there is no relationship

Footnote 2: See appendix A for complete creativity data, and appendix B for complete precognition data.

between creativity and pre-cognition, consequently the correlation factor, r, is expected to be zero. A two tailed test was used.

Table 3 gives the results of the statistical analysis of data. The correlation factor, r, the Z score and the statistical confidence level is given for each of the 18 correlations.

Table 3- Statistical results

Category	r	Z	Confidence, %
Activity 1-Originality	.0504	.5262	40.00
Activity 1-Elaboration	.0129	.1347	18.55
Activity 2-Fluency	-.1911	-1.9952	95.39
Activity 2-Flexibility	-.2465	-2.573536	98.99
Activity 2-Originality	-.2443	-2.5506	98.92
Activity 2-Elaboration	-.2562	-2.6748	99.25
Activity 3-Fluency	.0377	.3936	30.60
Activity 3-Flexibility	-.0160	-.1670	90.50
Activity 3-Originality	-.0847	-.8843	62.35
Activity 3-Elaboration	-.0255	-.2662	10.49
Total Score-Fluency	.0088	.0919	7.66
Total Score-Flexibility	-.0979	-1.0221	69.32
Total Score-Originality	-.1294	-1.3509	82.32
Total Score-Elaboration	-.1609	-1.6798	90.69
Total Score - Activity 1	.0445	.4646	36.14
Total Score - Activity 2	-.2856	-2.9818	99.72
Total Score - Activity 3	-.0429	.4479	34.56
Total Score-Activity 1+2+3	-.1586	.6558	90.21

The five Z scores and confidence levels for activity 2 are strong individually and consistant for the entire activity. No other pattern of strong correlations developed.

DISCUSSION

This study confirms the results of the 1977 study. The high correlation factors that relate activity 2 of the creativity test to pre-cognition exist only for activity 2. No other pattern develcped. Also, the correlation factors for each of the five categories of activity 2 were higher than any of the other 13 categories. Moreover, activity 2 produced negative correlations for each of its five categories, again confirming the results of the 1977 study.

The probability that the high selective correlations of activity 2 would occur in two consecutive studies by chance alone is remarkably low:

$$P = \frac{c(5.5)c(13.0)^2}{c(18.5)} = 1.35 \times 10^{-8}$$

Major Questions - Unanswered

1) What does activity 2 of the Torrance test measure that activities 1 and 3 do not?

2) Previous studies by the writer indicate that there is no relationship between activity 2 and pre-cognition when the subjects were engineering seniors, liberal arts freshmen and liberal arts seniors.

Why only engineering freshmen?

3) Previous studies by the writer did not produce a relationship between activity 2 and pre-cognition, using engineering freshmen, when pre-cognition scores were developed by using a unique computerized random

number for each subject. The relationship exists only when the subjects compete in trying to forcast the same future event. What does competition have to do with pre-cognition?

4) Why are the strong correlations of pre-cognition to activity 2 always negative?

CONCLUSIONS

The only reasonably safe conclusion that the writer can draw from the results of these experiments is that activity 2 of the Torrance test is producing scores that are negatively related to scores produced by the Dean-Mihalasky test.

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APPENDIX A

CREATIVITY DATA

Creativity data on each group is recorded via 18 columns of data. Each column, labeled A through R, represents the individual student's creativity scores relative to the following index of test activities:

Column	Identification	Description
A	Activity 1	Originality
B	Activity 1	Elaboration
C	Activity 2	Fluency
D	Activity 2	Flexibility
E	Activity 2	Originality
F	Activity 2	Elaboration
G	Activity 3	Fluency
H	Activity 3	Flexibility
I	Activity 3	Originality
J	Activity 3	Elaboration
K	Total Score	Fluency
L	Total Score	Flexibility
M	Total Score	Originality
N	Total Score	Elaboration
O	Total Score	Activity 1
P	Total Score	Activity 2
Q	Total Score	Activity 3
R	Total Score	Activity 1+2+3

CREATIVITY DATA

#	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	0	0	10	10	9	10	2	2	13	3	12	12	22	13	0	39	20	59
2	4	8	10	10	14	13	6	4	6	9	16	14	24	30	12	47	25	84
3	0	22	9	9	10	34	3	3	3	8	12	12	13	64	22	62	17	101
4	0	12	9	9	9	36	12	12	38	22	21	21	47	70	12	63	84	159
5	3	17	6	3	6	35	11	2	6	21	18	5	15	73	20	51	40	110
6	0	9	10	8	15	34	21	7	5	23	31	15	20	66	9	67	56	132
7	5	5	10	5	19	59	6	5	10	14	16	10	34	78	10	93	35	138
8	4	26	10	9	17	23	12	7	50	16	22	16	71	65	30	59	85	174
9	0	7	10	9	9	27	19	13	29	28	29	22	38	62	7	55	89	151
10	0	11	7	7	8	16	2	2	36	10	10	9	44	37	11	39	50	100
11	5	21	10	9	12	39	10	6	28	31	20	15	45	91	26	70	75	171
12	4	2	5	4	1	8	10	7	4	17	15	11	9	27	6	18	38	62
13	5	23	8	6	14	27	4	4	6	12	13	10	25	62	28	56	26	110
14	0	16	10	7	10	56	19	11	42	41	29	18	52	113	16	83	113	212
15	0	19	10	10	11	43	17	14	27	41	27	24	38	103	19	74	99	192
16	0	0	9	9	17	17	10	8	15	14	19	17	32	31	0	52	47	99
17	3	4	9	6	8	32	7	3	32	37	17	9	43	73	7	56	79	142
18	5	15	10	9	14	20	10	10	9	17	20	19	28	52	20	53	46	119
19	5	3	10	10	13	8	8	6	17	11	18	16	35	22	8	41	42	91
20	4	8	10	10	18	48	2	2	21	6	12	12	43	62	12	26	31	129
21	5	23	8	4	1	24	0	0	5	11	10	4	11	58	28	39	16	83
22	4	20	10	8	11	20	11	8	20	16	21	16	35	56	24	49	55	128
23	0	4	10	8	10	9	9	6	14	16	19	14	24	29	4	37	45	86
24	0	14	10	10	13	40	0	0	0	0	10	10	13	54	14	73	0	87
25	0	12	10	8	11	33	1	1	0	16	11	9	11	61	12	62	18	92
26	0	12	10	10	11	9	12	9	24	27	22	19	33	48	12	40	72	124
27	4	3	9	8	7	5	17	13	23	26	27	21	34	34	7	30	79	116
28	5	3	10	10	17	27	17	14	52	26	27	24	74	56	8	64	109	181
29	3	3	10	9	14	46	0	0	0	10	10	9	17	59	6	79	10	95
30	0	0	7	7	5	4	4	1	10	6	11	8	15	10	0	23	21	44
31	0	12	10	9	12	21	2	2	10	4	12	11	22	37	12	52	18	82
32	5	15	10	10	15	23	13	8	33	20	23	18	53	58	20	58	74	152
33	0	0	10	9	8	1	3	3	7	5	13	12	22	6	0	28	18	46
34	5	5	10	9	19	32	16	12	47	24	26	21	71	61	10	70	99	179
35	5	10	9	8	12	27	10	7	35	22	20	15	52	59	15	57	74	146
36	0	2	8	7	11	40	6	6	12	17	14	13	23	59	2	66	41	109
37	0	8	10	10	13	33	7	6	18	9	17	16	31	52	8	68	40	116
38	0	10	10	10	11	30	13	10	17	21	23	20	28	61	10	61	61	132
39	4	14	10	10	12	42	14	9	22	28	24	19	38	84	18	74	73	165
40	0	9	10	10	8	12	18	8	8	25	28	18	16	46	9	40	59	108
41	0	0	10	9	14	17	20	19	42	37	30	28	56	54	0	50	118	168
42	0	11	10	9	14	25	26	21	39	36	36	30	53	72	11	58	122	191
43	0	11	10	10	9	29	7	5	3	23	77	15	12	63	11	58	38	107
44	5	2	9	7	14	26	12	7	9	23	22	14	28	51	7	57	51	115
45	0	10	10	6	17	68	5	2	11	13	15	8	28	91	10	101	31	142
46	0	10	10	6	5	35	3	2	13	15	13	8	18	60	10	56	33	99
47	0	5	10	9	11	29	15	10	29	29	25	19	40	63	5	59	83	147
48	0	6	10	10	15	22	32	24	62	32	42	34	77	60	6	57	150	213
49	5	2	9	8	16	68	25	24	60	47	35	32	81	119	7	102	156	265
50	5	7	10	9	14	39	15	14	49	14	25	23	68	60	12	72	92	176

#	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
51	0	0	8	7	11	18	14	10	30	17	22	17	40	35	0	48	71	119
52	0	0	8	8	10	44	9	9	9	28	17	17	19	72	0	70	55	125
53	1	2	10	10	10	41	25	22	58	79	35	32	69	122	3	71	184	258
54	4	10	10	10	10	32	12	7	11	31	22	17	25	73	14	64	61	139
55	5	10	10	9	11	62	1	1	1	4	11	10	17	76	15	92	[illegible]	114
56	5	8	10	10	16	42	1	1	10	12	11	11	31	62	13	78	24	115
57	0	0	9	9	9	25	5	4	16	9	14	13	25	34	0	52	34	86
58	0	19	9	8	14	33	2	1	20	15	11	9	34	67	19	64	38	121
59	5	13	10	10	9	55	35	17	36	90	45	27	59	158	18	84	178	290
60	0	15	10	10	11	22	12	9	9	27	22	19	20	64	15	53	57	125
61	0	1	8	7	5	30	11	2	0	22	19	9	5	57	1	54	35	90
62	4	9	10	10	13	87	16	13	43	50	26	23	59	146	13	120	121	254
63	0	4	10	10	15	36	6	6	17	20	16	16	32	60	4	71	49	124
64	5	18	10	10	16	88	2	2	16	18	12	12	37	124	23	124	38	185
65	0	14	10	10	13	74	28	17	19	66	38	27	32	154	14	107	130	251
66	5	16	10	10	13	73	10	8	12	37	20	18	30	126	21	106	67	194
67	5	7	10	8	12	37	2	2	30	8	12	10	47	52	12	67	42	121
68	2	18	10	10	16	73	5	3	28	25	15	13	46	116	20	109	61	190
69	0	15	10	9	11	38	4	1	27	16	14	10	38	69	15	68	48	131
70	0	8	10	10	11	50	17	6	20	30	27	16	31	88	8	81	73	162
71	3	9	10	10	15	44	18	15	27	47	28	25	45	100	12	79	107	199
72	0	3	10	10	10	58	8	3	5	28	18	13	15	89	3	88	44	135
73	0	16	10	10	13	50	3	1	25	17	13	11	43	83	16	88	46	150
74	3	6	10	10	13	72	14	10	15	34	24	20	31	112	9	105	73	187
75	4	5	6	4	8	23	3	1	40	17	9	5	52	45	9	41	61	111
76	3	17	10	10	14	37	7	5	28	4	17	15	45	58	20	71	44	135
77	3	9	9	9	12	30	7	7	8	18	16	16	23	57	12	60	40	112
78	2	9	10	10	16	43	4	4	51	17	14	14	69	69	11	79	76	166
79	4	7	5	5	4	20	5	3	2	7	10	8	10	34	11	34	17	62
80	0	15	6	5	5	19	5	4	14	15	11	9	19	49	15	35	38	88
81	3	7	3	3	4	12	6	6	8	13	9	9	15	32	10	22	33	65
82	3	19	9	9	12	33	8	5	29	21	17	14	44	73	22	63	63	148
83	2	4	9	9	11	20	15	15	15	20	24	24	28	44	6	49	65	120
84	5	19	10	9	8	37	3	3	36	24	13	12	49	80	24	64	66	154
85	5	26	10	10	17	59	11	6	10	36	21	16	32	121	31	96	63	190
86	4	11	4	3	4	23	6	5	11	8	10	8	19	42	15	34	30	79
87	5	10	9	9	11	23	3	3	18	11	12	12	34	44	15	52	35	102
88	0	4	4	4	6	27	1	1	23	21	5	5	29	52	4	41	46	91
89	1	7	7	7	4	13	4	4	7	20	11	11	12	40	8	31	35	74
90	5	19	4	4	3	28	4	4	19	30	8	8	27	77	24	39	57	120
91	0	9	6	6	8	31	7	7	12	40	13	13	20	90	19	51	66	136
92	4	13	10	10	14	44	10	10	32	24	20	20	50	81	17	78	76	171
93	0	14	3	3	4	7	8	7	5	18	11	10	9	39	14	17	38	69
94	4	25	5	5	6	24	10	8	38	27	15	13	48	76	29	40	83	152
95	0	8	5	4	5	33	2	2	35	12	7	6	40	53	8	47	51	106
96	5	8	6	5	8	26	14	12	37	24	20	17	40	58	13	45	87	135
97	4	10	10	7	14	32	5	5	41	10	15	12	59	52	14	63	61	138
98	3	16	5	5	6	37	10	9	14	21	15	14	23	74	19	53	54	126
99	3	10	10	9	16	31	5	2	49	10	15	11	68	51	13	66	66	145
100	4	12	6	6	9	27	8	7	25	36	14	13	38	75	16	48	76	140
101	1	17	7	7	7	31	3	3	1	15	10	10	9	63	18	52	22	92
102	4	14	8	8	9	18	2	2	36	2	10	10	49	34	18	43	42	103
103	3	8	7	6	6	16	6	5	13	29	13	11	22	53	11	35	53	99
104	0	7	10	9	11	26	7	5	26	23	17	14	37	56	7	56	61	124
105	5	26	7	7	10	27	7	6	22	27	13	13	37	80	31	51	62	143
106	5	14	5	5	3	9	4	4	5	12	9	9	13	35	19	22	25	66
107	5	8	9	9	14	57	15	15	20	35	24	24	29	100	13	89	85	187
108	5	9	5	4	6	27	6	6	12	29	11	10	23	65	14	42	53	109
109	5	12	6	6	7	25	11	10	10	29	17	16	22	66	17	44	60	121
110	3	12	8	8	13	31	6	4	40	21	14	12	56	64	15	60	71	146

APPENDIX 2

PRE-COGNITION SCORES

The list on the following page contains the pre-cognition score for each subject.

PRECOGNITION SCORES

#	Hits
1	9
2	9
3	15
4	14
5	10
6	12
7	12
8	6
9	12
10	9
11	9
12	8
13	15
14	11
15	10
16	10
17	11
18	15
19	13
20	6
21	15
22	10
23	12
24	5
25	9
26	11
27	11
28	10
29	6
30	15
31	11
32	15
33	7
34	11
35	9
36	7
37	9
38	8
39	10
40	13
41	12
42	5
43	10
44	11
45	8
46	11
47	12
48	8
49	14
50	8
51	7
52	5
53	9
54	8
55	13
56	7
57	4
58	11
59	9
60	7
61	16
62	7
63	6
64	4
65	6
66	5
67	9
68	9
69	12
70	12
71	8
72	9
73	6
74	11
75	12
76	9
77	6
78	5
79	10
80	9
81	13
82	11
83	7
84	9
85	10
86	14
87	5
88	9
89	15
90	9
91	14
92	11
93	10
94	6
95	9
96	11
97	8
98	8
99	7
100	11
101	4
102	8
103	8
104	11
105	11
106	14
107	8
108	8
109	12
110	15